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***Indian Standard***  
SPECIFICATION FOR  
BACK COATED CARBON PAPERS  
FOR TYPEWRITER

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**BUREAU OF INDIAN STANDARDS**  
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# ***Indian Standard***

## SPECIFICATION FOR BACK COATED CARBON PAPERS FOR TYPEWRITER

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# *Indian Standard*

## SPECIFICATION FOR BACK COATED CARBON PAPERS FOR TYPEWRITER

### 0. FOREWORD

**0.1** This Indian Standard was adopted by the Indian Standards Institution on 7 June 1976, after the draft finalized by the Inks and Allied Products Sectional Committee had been approved by the Chemical Division Council.

**0.2** Besides the carbon coating on one side of carbon papers an additional coating of wax or other suitable material is given on the back side to impart better appearance, performance and durability of the material. Since there is sufficient demand for such type of back coated carbon papers, the Sectional Committee decided to formulate an Indian Standard on the subject.

**0.3** The specification for single side coated carbon paper for typewriter is covered under a separate Indian Standard, namely, IS : 1551-1976\*.

**0.4** This standard contains clause 4.4 which calls for agreement between the purchaser and the supplier.

**0.5** For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960†. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

### 1. SCOPE

**1.1** This standard prescribes the requirements and the methods of sampling and test for back coated carbon papers, black, for use with typewriter.

### 2. TERMINOLOGY

**2.1** For the purpose of this standard, the definitions given in IS : 4395-1967‡ shall apply.

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\*Specification for carbon papers for typewriter (*first revision*).

†Rules for rounding off numerical values (*revised*).

‡Glossary of terms relating to ink and allied industries.

### 3. GRADES

**3.1** There shall be three grades of back coated carbon papers, namely:

<i>Grade 1</i>	Light weight
<i>Grade 2</i>	Medium weight
<i>Grade 3</i>	Standard weight

### 4. REQUIREMENTS

**4.1 Description** — The material shall consist of tissue paper coated on one side with suitable carbon ink necessary to give the required copying results, and coated with suitable wax/waxes/resins on the other side to produce an evenly coated wax backed carbon paper.

**4.2 Carbon Work** — Light shall not have any appreciable effect on the typed carbon work. There shall be a gradual, not abrupt, loss of distinctness of the carbon copies when repeatedly typed at the same place.

**4.3 Base Paper** — The base paper used in the manufacture of the material (or when decoated) shall be carbonizing tissue conforming to Type 1 of IS : 3413-1966\* in case of Grade 1 and Grade 2 of the material, and conforming to Type 2 in case of Grade 3 of the material.

**4.4 Size** — The size of carbon papers shall be as agreed to between the purchaser and the supplier. The tolerance allowed on the size shall be  $\pm 1.5$  mm in each direction.

**4.5 Resistance to Curling** — The material shall comply with the requirement of the test for resistance to curling as prescribed in Appendix A.

**4.6** The material shall also comply with the requirements given in Table 1, when tested by the methods prescribed in the appendices. Reference to the appropriate appendices is given in col 6 of the table.

### 5. KEEPING QUALITY

**5.1** The material shall continue to satisfy all the requirements prescribed in the standard and also remain free from fungal growth for a period of at least one year from the date of packing.

### 6. PACKING AND MARKING

**6.1 Packing** — Unless otherwise agreed to between the purchaser and the supplier 25 or 100 sheets shall be packed in a packet which may be either a folder or a cardboard box. When more than 25 sheets are packed in a packet, a demarcation sheets of a distinctive colour of the size of carbon papers shall be included after each 25 sheets.

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\*Specification for base paper for carbon paper.

**TABLE 1 REQUIREMENTS FOR BACK COATED CARBON PAPERS  
FOR TYPEWRITER**  
(Clause 4.6)

SL No.	CHARACTERISTIC	REQUIREMENT FOR			METHOD OF TEST ( REF TO APPENDIX )
		Grade 1	Grade 2	Grade 3	
(1)	(2)	(3)	(4)	(5)	(6)
i)	Substance of base paper, g/m <sup>2</sup>	11.5 ± 1.0	14.5 ± 1.0	17.5 ± 1.0	B
ii)	Coating:				
a)	Transfer coating, g/m <sup>2</sup>	10.0 ± 1.0	11.0 ± 1.0	12.0 + 1.5 - 1.0	B
b)	Back coating, g/m <sup>2</sup> , Min	3.0	3.0	3.0	B
iii)	Durability (minimum number of impressions at the same spot)	10	11	12	C
iv)	Manifolding (minimum number of copies)	8	6	5	C

**6.2 Marking**—Each packet shall be marked with the following information:

- a) Name and colour (black) of the material;
- b) Grade and size of the material;
- c) Month and year of packing;
- d) Name of the manufacturer and/or his recognized trade-mark, if any; and
- e) Identification in code or otherwise to enable the lot of manufacture to be traced back from records.

**6.2.1** The sheet and packet may also be marked with the Standard Mark

NOTE — The use of the Standard Mark is governed by the provisions of the Bureau of Indian Standards Act, 1986 and the Rules and Regulations made thereunder. The Standard Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well defined system of inspection, testing and quality control which is devised and supervised by BIS and operated by the producer. Standard marked products are also continuously checked by BIS for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

## 7. SAMPLING

**7.1** The method of drawing representative samples of the material and the criteria for finding out the conformity of the material to the requirements of this specification shall be as prescribed in Appendix D.

## A P P E N D I X A

(Clause 4.5)

### TEST FOR CURLING

#### A-1. PROCEDURE

**A-1.1** Place two sheets on a wire screen, carbon-coated side down, in a conditioning room in which relative humidity of  $65 \pm 2$  percent and temperature of  $27 \pm 1^\circ\text{C}$  are maintained. After the sheets have been conditioned for one hour, remove the sheets from the screen and place on a flat glass surface, carbon-coated side up. After one minute, measure the portions of the two narrow sides of each sheet which are in direct contact with the flat surface.

**A-1.2** The material shall be considered satisfactory if not less than 80 percent of the sum of the total lengths of the narrow sides are in contact with the flat surface.

## A P P E N D I X B

[Table 1, Items (i) and (ii)]

### DETERMINATION OF SUBSTANCE OF BASE PAPER AND MASS OF COATING

#### B-1. TEST PIECE

**B-1.1** Condition a sheet of carbon paper (see **B-2.1.1**) and cut out a test piece measuring  $10.0 \times 10.0$  cm. Weigh it accurately.

#### B-2. DECOATING

**B-2.1** Take a suitable quantity of carbon tetrachloride (see IS : 718-1970\*) or a mixture of equal volume of carbon tetrachloride and acetone (see IS : 170-1966†) in a beaker. Bring the contents to boil. Wet a wad of surgical grade of cotton wool with carbon tetrachloride, squeeze gently

\*Specification for carbon tetrachloride (*first revision*).

†Specification for acetone (*first revision*).

and by hand-rubbing remove the transfer coating of the test piece (*see B-1.1*). Repeat with fresh wad of cotton wool, until complete transfer coating is removed. Allow the test piece to dry and weigh it accurately.

**B-2.1.1** Again take a fresh quantity of carbon tetrachloride or the aforesaid mixture of carbon tetrachloride and acetone and bring it to boil. Immerse the test piece (transfer side decoated) into the boiling solvent until tissue is clean. Repeat the operation with fresh quantity of solvent, if necessary. After the coating has been removed, dry the decoated paper, condition it (*see B-2.1.2*) and weigh accurately.

**B-2.1.2 Conditioning** — Suspend the test piece in a conditioning chamber in which relative humidity of  $65 \pm 2$  percent and temperature of  $27 \pm 1^\circ\text{C}$  are maintained (temperature should not vary by more than  $\pm 1^\circ\text{C}$  in a given series of tests) in such a way that conditioning atmosphere has free access to all the surfaces. The test piece shall be deemed to have reached equilibrium when the result of two consecutive weighings at an interval of one hour do not differ by more than 0.4 percent of the total mass.

### B-3. CALCULATION

**B-3.1** Calculate substance and mass of coatings as follows:

$$\text{a) Substance of base paper, g/m}^2 = \frac{M_2}{A}$$

$$\text{b) Transfer coating, g/m}^2 = \frac{M - M_1}{A}$$

$$\text{c) Wax coating, g/m}^2 = \frac{M_1 - M_2}{A}$$

where

$M_2$  = mass in g of the test piece after removing the transfer coating and the wax coating (**B-2.1.1**),

$A$  = area in  $\text{m}^2$  of the test piece,

$M$  = mass in g of the test piece before decoating (**B-1.1**), and

$M_1$  = mass in g of the test piece after removing the transfer coating (**B-2.1**).

## APPENDIX C

[Table 1, Items (iii) and (iv)]

### TEST FOR DURABILITY AND MANIFOLDING

#### C-1. TESTING APPARATUS

**C-1.1** The tests described shall be made on any suitable machine, meant for testing carbon papers and typewriter ribbons, with freshly cleaned pica type. A No. 1 platen and typewriter ribbon (*see IS : 4174-1967\**) shall be used.

NOTE — 'Prufako' Model VI manufactured by Karl Kracke, Honnauer (Germany) is one of the suitable machines for this test. If this machine is used, resistance, speed and stroke shall be kept at 80, 70 and 70 respectively and the drum pressure device set in position 1.

#### C-2. TEST FOR DURABILITY

**G-2.1** Ordinary typing paper of substance  $40 \text{ g/m}^2$  (*see IS : 1848-1971†*) shall be used in making the test. A piece about 4 to 5 cm of the carbon paper to be tested shall be securely fastened to the first sheet so that the coated side of the sample comes in contact with the copy sheet in the usual way. After the two sheets of paper have been placed in the testing machine, the first sheet carrying the carbon paper shall be securely fastened to the back of the carriage in any suitable way so that the former will not move while the platen is turned for spacing lines. The platen shall be turned slightly to pull the first sheet taut. Then a line of suitable letters shall be written exactly over the same spot of the carbon paper. The carbon paper shall make not fewer than the required number of carbon copies that are clean, legible and of good intensity. In examining the sheet, the operator shall not be misled by extra black edges of some letters that are indicative of a shifting of the first sheet with the attached sample or of a light play of the type bar.

#### C-3. TEST FOR MANIFOLDING

**C-3.1** Ordinary typing paper of substance  $40 \text{ g/m}^2$  (*see IS : 1848-1971†*) shall be used for this test. A convenient size sheet for this test is  $9 \times 20 \text{ cm}$ . A first sheet and copy sheets with sheets of carbon paper shall be assembled in the usual way. The assembled sheets shall be inserted in the machine and the entire keyboard, both upper and lower case, shall be written twice over in unrelated order. The last copy sheet shall be examined for legibility. None of the characters shall be illegible.

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\*Specification for typewriter ribbon.

†Specification for writing and printing papers (*first revision*).

# AP PENDIX D

*(Clause 7.1)*

## SAMPLING OF BACK COATED CARBON PAPERS FOR TYPEWRITER

### **D-1. GENERAL PRECAUTIONS**

- D-1.1** Samples shall be drawn from original unopened packets.
- D-1.2** Samples shall be protected from abnormal exposure to heat and light, and shall not be allowed to come in contact with any liquid.
- D-1.3** Samples shall be touched as little as possible, and contact with sweated hands shall be avoided.
- D-1.4** Samples shall not be folded before testing.

### **D-2. SCALE OF SAMPLING**

**D-2.1 Lot**— All the packets in a single consignment of the same size, same grade and from the same batch of manufacture, shall constitute a lot.

**D-2.1.1** Samples shall be tested from each lot separately for ascertaining the conformity of the lot to the requirements of the specification.

**D-2.2** The number of packets to be selected from a lot for sampling shall depend upon the size of the lot and shall be in accordance with col 1 and 2 of Table 2.

**TABLE 2 SCALE OF SAMPLING AND PERMISSIBLE NUMBER  
OF DEFECTIVES**

No. OF PACKETS IN THE LOT	No. OF PACKETS TO BE SELECTED	No. OF SHEETS IN THE SAMPLE	PERMISSIBLE NO. OF DEFECTIVE SHEETS
(1)	(2)	(3)	(4)
Up to 15	3	5	0
16 to 25	6	8	0
26 „ 100	10	13	0
101 „ 300	15	20	1
301 „ 500	20	32	2
501 and above	30	50	3

**D-2.3** These packets shall be selected at random from the lot and in order to ensure randomness of selection, procedures given in IS : 4905-1968\* shall be followed.

\*Methods for random sampling.

**D-2.4** From each of the packets selected under **D-2.3**, approximately equal number of sheets shall be taken so as to constitute the required sample size given in col 3 of Table 2.

### **D-3. NUMBER OF TESTS AND CRITERIA FOR CONFORMITY**

**D-3.1** All the sheets selected according to col 2 and 3 of Table 2 shall be examined for requirements given in **4.1** to **4.6**. A sheet failing to meet any one or more of the requirements shall be considered as defective.

**D-3.2** A lot shall be declared as conforming to the requirements of this specification if the number of sheets found defective under **D-3.1** is less than or equal to the corresponding permissible number of defective sheets given in col 4 of Table 2.

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